

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 1 of 13

Applicant : CIXI LANDSIGN ELECTRIC APPLIANCE CO., LTD
Address : NO.355, MINGZHOU ROAD, CIXI, NINGBO, CHINA
Manufacture : CIXI LANDSIGN ELECTRIC APPLIANCE CO., LTD
Address : NO.355, MINGZHOU ROAD, CIXI, NINGBO, CHINA

The following samples were submitted and identified by/on behalf of the client as:

Sample Description : Solar lights
Model No. : XLTD-series
Date of Sample Received : October 28, 2017
Sample Testing Date : October 28, 2017 to November 07, 2017

Test Requested	In accordance with the RoHS Directive 2011/65/EU.
Test Method	<ul style="list-style-type: none">- With reference to IEC 62321-2:2013, disassembly, disjointment and sample preparation were performed.- With reference to IEC 62321-3-1:2013, screening by EDXRF Spectroscopy.- With reference to IEC 62321-5:2013, determination of Cadmium by ICP-OES.- With reference to IEC 62321-5:2013, determination of Lead by ICP-OES.- With reference to IEC 62321-4:2013, determination of Mercury by ICP-OES.- With reference to IEC 62321-6:2015, determination of PBBs and PBDEs by GC-MS.- With reference to IEC 62321:2008 & IEC 62321-7-1:2015, determination of Hexavalent Chromium by spot test/Colorimetric using UV-Vis.
Test Result	Please refer to next pages.
Test Conclusion	Based on the performed tests on the submitted samples, the results comply with the RoHS Directive 2011/65/EU.

***** For Further Details, Please Refer to the Following Page(s) *****

Compiled by:

Tommy

Tommy Song / Project Engineer



Approved by:

Cherry Chen

Cherry Chen / Laboratory Supervisor

This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 2 of 13

Test Results:

Part No.	Part Description	Restricted Substances	Result of XRF	Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
1	Silvery metal sleeve	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	---	---	---
		PBDEs	---	---	---
2	White plastic sleeve	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
3	Black plastic tip	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
4	Silvery coating of plastic sheet	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
5	Black plastic base of plastic sheet	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
6	Black plastic of battery holder	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply

This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 3 of 13

Part No.	Part Description	Restricted Substances	Result of XRF	Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
7	Silvery metal screw of LED panel	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	---	---	---
		PBDEs	---	---	---
8	Yellow LED light	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	IN	ND	Comply
		PBDEs	IN	ND	Comply
9	White coating of LED panel	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
10	Brown LED panel	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	IN	ND	Comply
		PBDEs	IN	ND	Comply
11	Soldering tin of PCB board	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	---	---	---
		PBDEs	---	---	---
12	Green PCB board	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	IN	ND	Comply
		PBDEs	IN	ND	Comply

This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 4 of 13

Part No.	Part Description	Restricted Substances	Result of XRF	Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
13	Silvery metal spring	Cd Pb Hg Cr(IV) PBBs PBDEs	BL BL BL OL --- ---	--- --- --- Negative --- ---	Comply Comply Comply Comply --- ---
14	Green color-ring resistor	Cd Pb Hg Cr(IV) PBBs PBDEs	BL BL BL BL BL BL	--- --- --- --- --- ---	Comply Comply Comply Comply Comply Comply
15	Brown ceramic capacitor	Cd Pb Hg Cr(IV) PBBs PBDEs	BL BL BL BL --- ---	--- --- --- --- --- ---	Comply Comply Comply Comply --- ---
16	Chip IC	Cd Pb Hg Cr(IV) PBBs PBDEs	BL BL BL BL BL BL	--- --- --- --- --- ---	Comply Comply Comply Comply Comply Comply
17	Silvery metal pin of chip IC	Cd Pb Hg Cr(IV) PBBs PBDEs	BL BL BL BL --- ---	--- --- --- --- --- ---	Comply Comply Comply Comply --- ---
18	Black metal shell of switch	Cd Pb Hg Cr(IV) PBBs PBDEs	BL BL BL BL --- ---	--- --- --- --- --- ---	Comply Comply Comply Comply --- ---

This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 5 of 13

Part No.	Part Description	Restricted Substances	Result of XRF	Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
19	Black plastic of switch	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
20	Coppery metal sheet of switch	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	---	---	---
		PBDEs	---	---	---
21	Silvery metal spring of switch	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	---	---	---
		PBDEs	---	---	---
22	Brown plastic pedestal of switch	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
23	Coppery metal pin of switch	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	---	---	---
		PBDEs	---	---	---
24	Black solar panel	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply

This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 6 of 13

Part No.	Part Description	Restricted Substances	Result of XRF	Result of Wet Chemical Testing (mg/kg)	Conclusion on RoHS
25	Transparent plastic film	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
26	Black plastic jacket of inner wire	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
27	Red plastic jacket of inner wire	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply
28	Coppery metal core of inner wire	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	---	---	---
		PBDEs	---	---	---
29	Black sealant	Cd	BL	---	Comply
		Pb	BL	---	Comply
		Hg	BL	---	Comply
		Cr(IV)	BL	---	Comply
		PBBs	BL	---	Comply
		PBDEs	BL	---	Comply

This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 7 of 13

Note:

- (1) (a) There are results on total Br while test items on restricted substances are PBBs and PBDEs. There are results on total Cr while test items on restricted substances are Cr(VI)
- (b) Results are obtained by EDXRF for primary screening, and further chemical testing by ICP (for Cd, Pb, Hg), UV-VIS (for Cr⁶⁺) and GC-MS (for PBBs, PBDEs) is recommended to be performed, if the concentration exceeds the below warning value according to IEC 62321-3-1:2013 (unit: mg/kg)

Element	Polymer	Metal	Composite Materials
Cd	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	BL ≤ (70-3σ) < IN < (130+3σ) ≤ OL	LOD < IN < (150+3σ) ≤ OL
Pb	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Hg	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (700-3σ) < IN < (1300+3σ) ≤ OL	BL ≤ (500-3σ) < IN < (1500+3σ) ≤ OL
Cr	BL ≤ (700-3σ) < IN	BL ≤ (700-3σ) < IN	BL ≤ (500-3σ) < IN
Br	BL ≤ (300-3σ) < IN	---	BL ≤ (250-3σ) < IN

BL= Below Limit OL= Over Limit LOD = Limit of Detection --- = Not Regulated

- (2) "IN" expresses the inconclusive region, and further chemical testing to confirm whether it complies with the requirement of RoHS Directive.
- (3) The XRF screening test for RoHS elements – the reading may be different to the actual content in the sample be of non-uniformity composition.
- (4) ppm = mg/kg, based on the dry weight of tested sample.
- (5) ND = Not Detected, less than the value of Method Detection Limit.
- (6) MDL= Method Detection Limit in wet chemical test

Test Items	Pb	Cd	Hg	Cr ⁶⁺	PBB	PBDE
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
MDL	2	2	2	2	5	5

- (7) According to IEC 62321:2008 & IEC 62321-7-1:2015, result on Cr⁶⁺ for metal sample is shown as Positive/Negative.
 Positive = Presence of Cr⁶⁺ coating;
 Negative = Absence of Cr⁶⁺ coating.
 Positive indicates the presence of Cr⁶⁺ on the tested areas, the result be regarded as conflict with RoHS requirement.
 Negative indicates the absence of Cr⁶⁺ on the tested areas, the result be regarded as no conflict with RoHS requirement.

This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

TEST REPORT

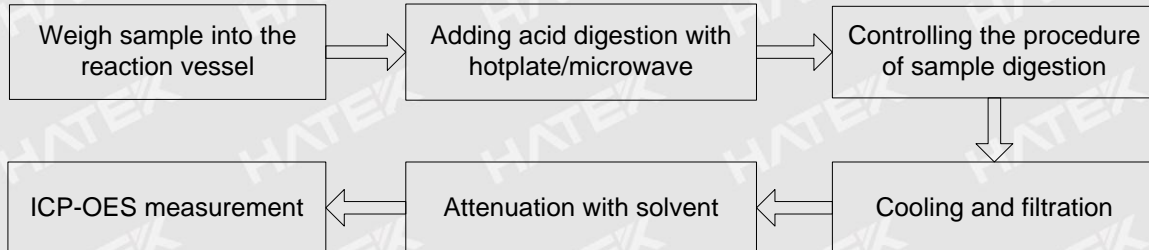
Report No.: HA0117101407CHEM

Date: November 07, 2017

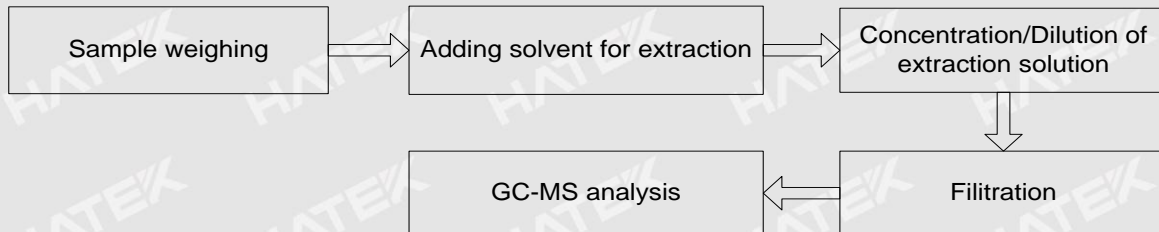
Page 8 of 13

Measurement Flowchart:

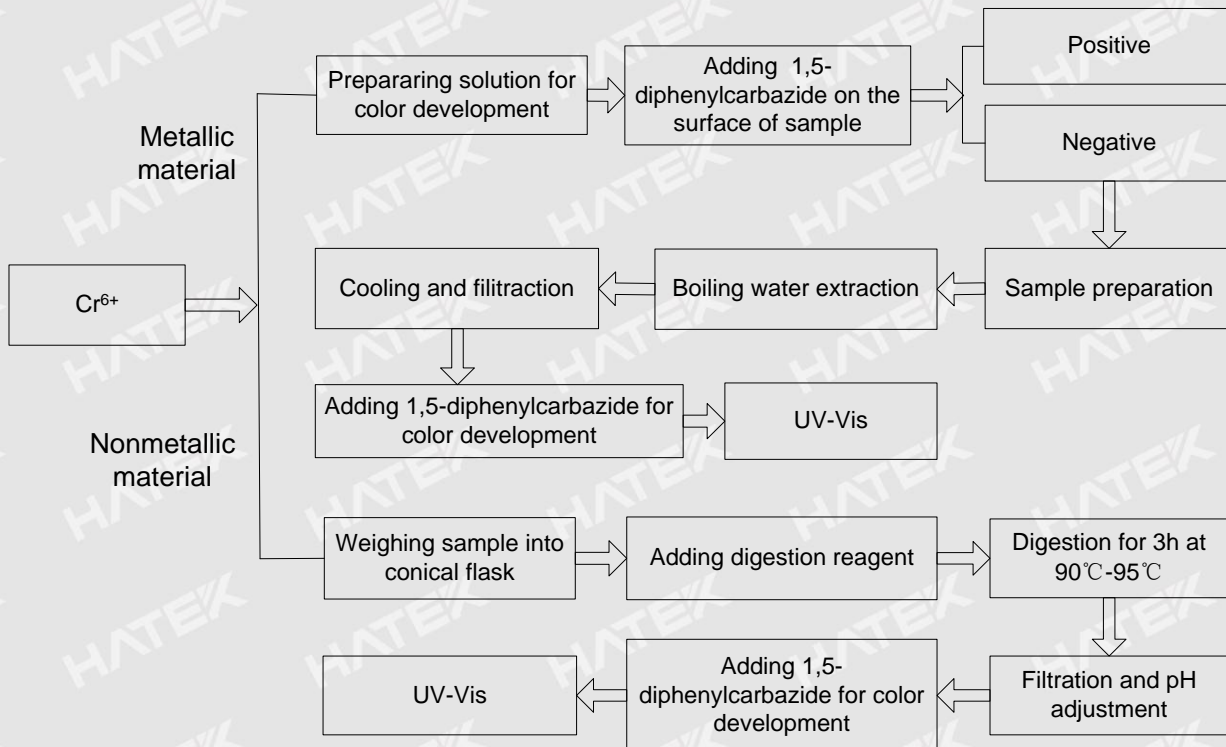
(1) Mercury (Hg), Cadmium (Cd) and Lead (Pb)



(2) PBBs and PBDEs



(3) Hexavalent Chromium (Cr⁶⁺)



This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 9 of 13

Sample Photo:



This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

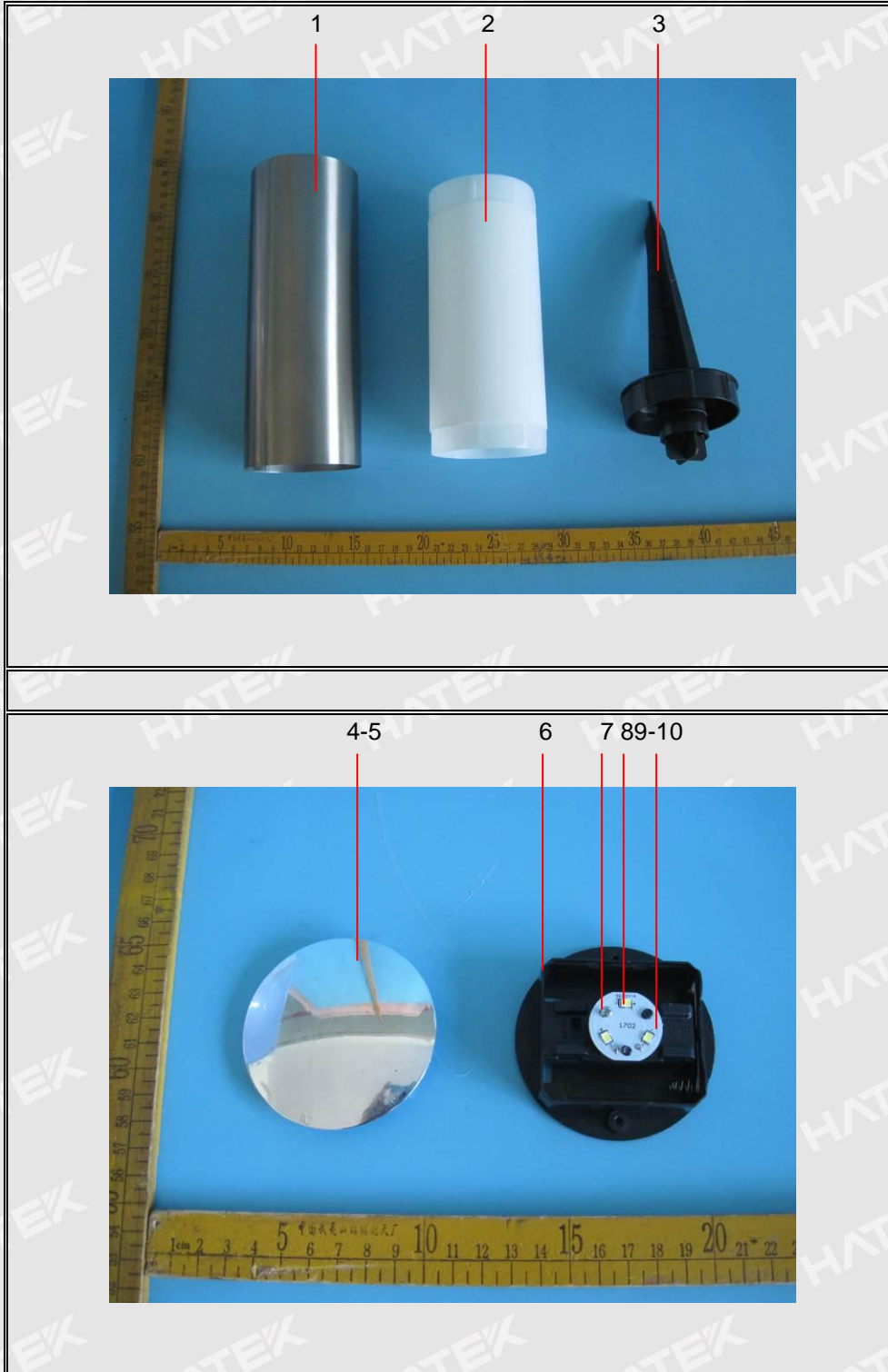
TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 10 of 13

Parts Photo:



This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

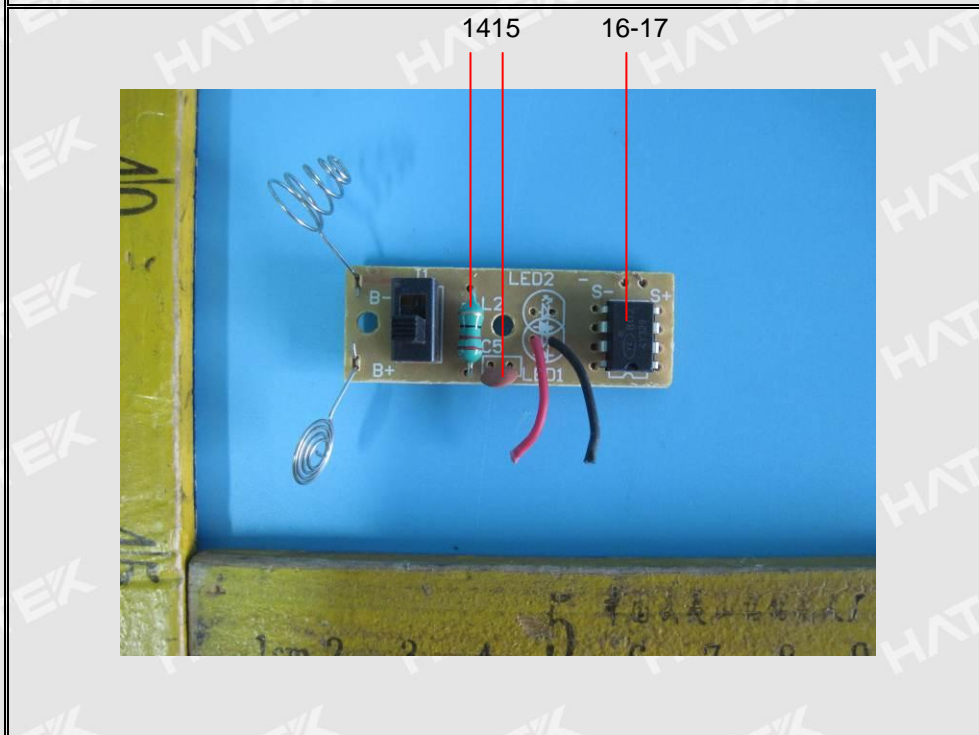
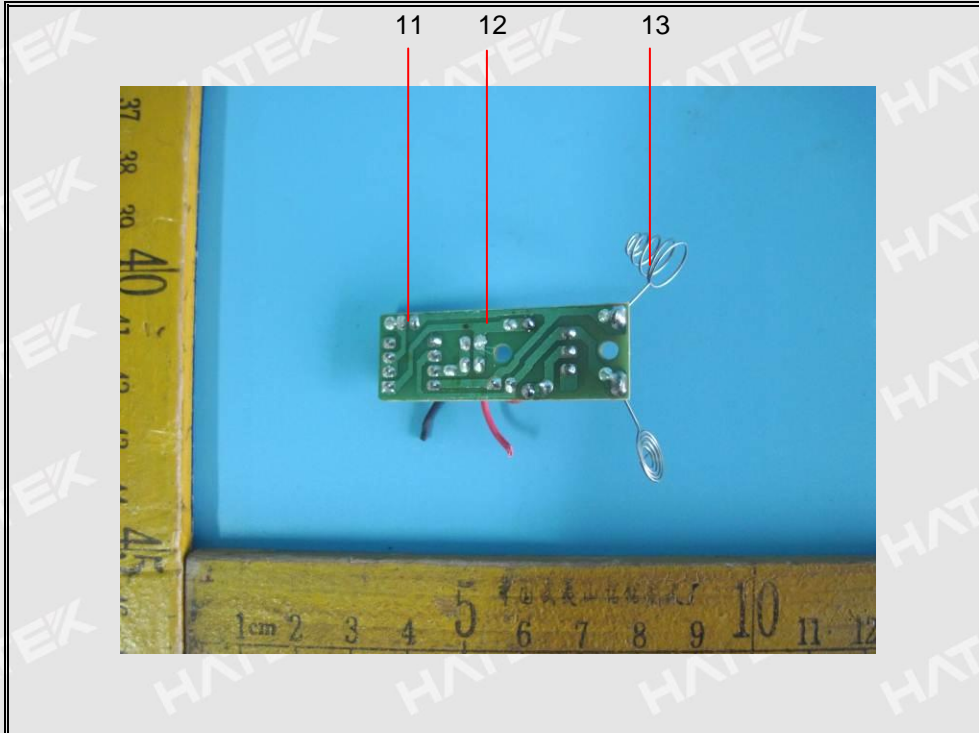
Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 11 of 13



This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

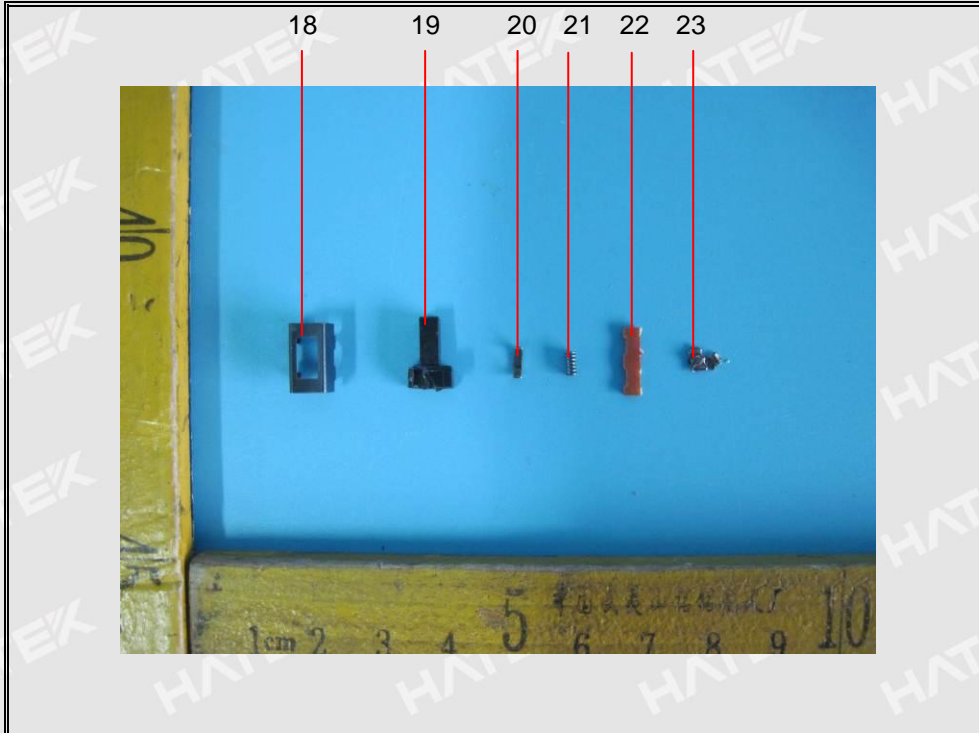
Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 12 of 13



This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

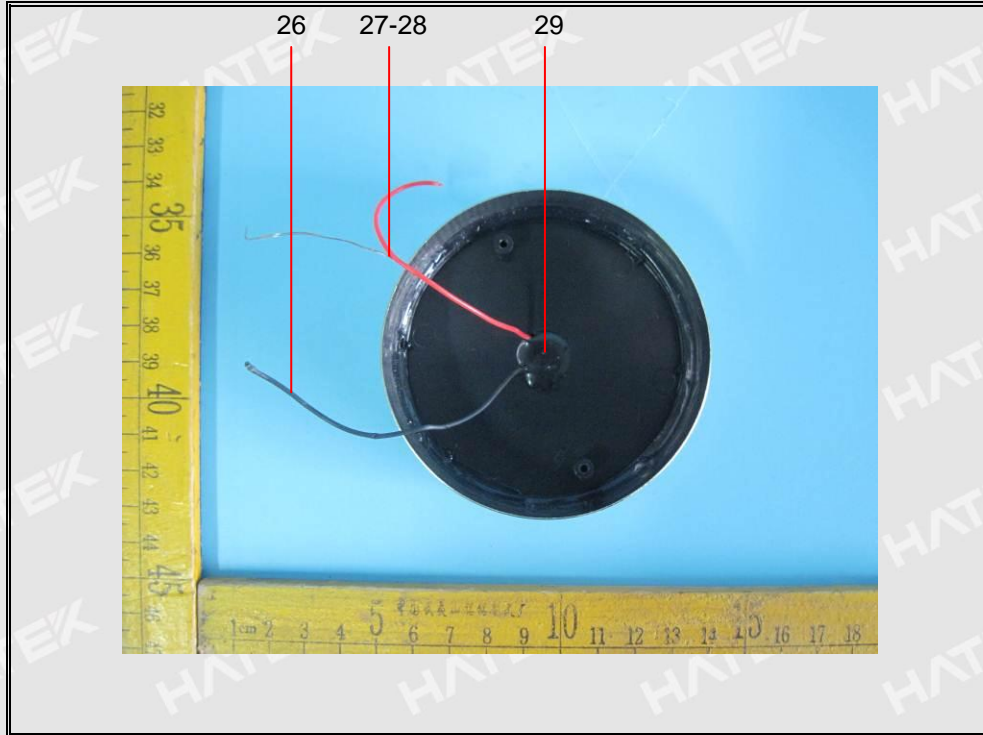
Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn

TEST REPORT

Report No.: HA0117101407CHEM

Date: November 07, 2017

Page 13 of 13



===== End of Test Report =====

This document cannot be reproduced except in full, without prior written approval of HATEK. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 30 days only.

Ningbo HATEK Co., Ltd.

Address: 6F, No. 65, Mujin Road, National Hi-Tech Zone, Ningbo, Zhejiang 315013, China

Tel: 86-574-55127666 Fax: 86-574-55127899 Website: www.hatek.com.cn E-mail: info@hatek.com.cn